

CLAIMS

What is claimed is

1. A gas generator composition, comprising:

a high nitrogen content solid comprising 60.0 to 95.0 wt % of said gas generator

5 composition, wherein said high nitrogen content solid is selected from the group consisting of 5-aminotetrazole, potassium 5-aminotetrazole, ammonium 5-nitraminotetrazole, triaminoguanidinium, 5-nitraminotetrazole, bitetrazole, guanylaminotetrazole nitrate, guanidinium bitetrazole, bis-triaminoguanidinium 5,5'-Azotetrazole, guanylaminotetrazole, 10 triaminoguanidinium nitrate, 1,7-diazido-2,4,6 trinitrazaheptane, cyanoguanyl azide, dihydrazinium-3,6-bis(5-tetrazolyl)-2-dihydrotetrazine, 1-amino-3,5-diazidotriazene, and triaminoguanidinium azide;

15 an oxidizer comprising 1.0 to 20.0 wt % of said gas generator composition, said oxidizer in an amount sufficient to cause flameless deflagration of said high nitrogen content solid, said oxidizer comprising an oxidizer salt, wherein said

15 oxidizer salt selected from the group consisting of alkali metal perchlorates, alkali metal nitrates, alkaline earth perchlorates, ammonium perchlorate, and alkaline earth nitrates; and

20 an elastomeric binder comprising 0.5 to 20.0 wt % of said gas generator compositon.

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2. The gas generator composition recited in claim 1, further comprising a flame inhibitor precursor comprising 0.5 to 10.0 wt % of said gas generator composition.

5 3. The gas generator composition recited in claim 1, further comprising powder pressing modifier comprising 0.1 to 5.0 wt % of said gas generator composition.

10 4. The gas generator composition recited in claim 1, further comprising an electrostatic charge suppressor comprising 0.1 to 5.0 wt % of said gas generator composition.

15 5. The gas generator composition recited in claim 1, wherein said high nitrogen content solid comprises 75.0 to 85.0 wt% of said gas generator composition.

20 6. The gas generator composition recited in claim 1, wherein said high nitrogen content solid comprises 80.0 to 82.0 wt% of said gas generator composition.

7. The gas generator composition recited in claim 1, wherein said elastomeric binder is selected from the group consisting of polyethyl acrylate, urethane-cured glycidyl azide polymer, bis azidomethyloxetane-nitratomethylmethyloxetane copolymer and bis azidomethyloxetane - azidomethylmethyloxetane copolymer.

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8. The gas generator composition recited in claim 1, wherein said oxidizer is selected from the group consisting of potassium perchlorate and potassium nitrate.

5 9. The gas generator composition recited in claim 1, wherein said oxidizer is selected from the group consisting of lithium perchlorate, sodium perchlorate, calcium perchlorate, manganese perchlorate, potassium perchlorate and any combination thereof.

10. The fire suppressing gas generator composition recited in claim 2, wherein said 10 flame inhibitor precursor is selected from the group consisting of decabromodiphenyl ether, decabromodiphenyl sulfide, decabromodiphenyl sulfate, decabromobiphenyl, hexabromobenzene, pentadecabromotriphenyl amine, and potassium perfluorooctanoate.

15 11. The fire suppressing gas generator composition recited in claim 3, wherein said powder pressing modifier is selected from the group consisting of mica, calcium stearate, soapstone and potassium perfluorooctanate.

12. The fire suppressing gas generator composition recited in claim 4, wherein said 20 electrostatic charge suppressor is selected from the group consisting of graphite, carbon black, powdered aluminum, polypyroles, polyacetylenes, polydiacetylenes and polyphenylene vinylenes.

13. A fire suppressing gas generator composition, comprising:

between 70.0 and 92.0 wt % of a solid, wherein said solid is selected from the group consisting of 5-aminotetrazole, potassium 5-aminotetrazole, ammonium 5-nitraminotetrazole, triaminoguanidinium, 5-nitraminotetrazole, bitetrazole, 5 guanylaminotetrazole nitrate, guanidinium bitetrazole, bis-triaminoguanidinium 5,5'-Azotetrazole, guanylaminotetrazole, triaminoguanidinium nitrate, 1,7-diazido-2,4,6 trinitraheptane, cyanoguanyl azide, dihydrazinium-3,6-bis(5-tetrazolyl)-2-dihydrotetrazine, 1-amino-3,5-diazidotriazene, and triaminoguanidinium azide;

10 between 1.0 and 10.0 wt % of an oxidizer salt; and

between 0.5 and 15.0 wt % of an elastomeric polymeric binder.

14. The fire suppressing gas generator composition recited in claim 13, wherein said

15 oxidizer salt is in an amount sufficient to cause flameless deflagration of said solid.

15. The fire suppressing gas generator composition recited in claim 13, wherein said

oxidizer salt is selected from the group consisting of alkali metal perchlorates, alkali metal nitrates, alkaline earth perchlorates and alkaline earth nitrates.

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16. The fire suppressing gas generator composition recited in claim 14, wherein said

oxidizer salt is selected from the group consisting of potassium perchlorate and potassium nitrate.

17. The gas generator composition recited in claim 13, wherein said oxidizer is selected from the group consisting of lithium perchlorate, sodium perchlorate, calcium perchlorate, manganese perchlorate, potassium perchlorate and any combination thereof.

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18. The fire suppressing gas generator composition recited in claim 13, further comprising between approximately 0.5 and 20.0 wt% of a flame inhibitor precursor.

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19. The fire suppressing gas generator composition recited in claim 13, further comprising between approximately 0.1 and 5.0 wt% of a powder pressing modifier.

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20. The fire suppressing gas generator composition recited in claim 13, further comprising between approximately 0.1 and 5.0 wt% of an electrostatic charge suppressor.

21. The fire suppressing gas generator composition recited in claim 18, wherein said flame inhibitor precursor is selected from the group consisting of decabromodiphenyl ether, decabromodiphenyl sulfide, decabromodiphenyl sulfate, decabromobiphenyl, hexabromobenzene, pentadecabromotriphenyl amine, and potassium perfluorooctanoate.

22. The fire suppressing gas generator composition recited in claim 19, wherein said powder pressing modifier is selected from the group consisting of mica, calcium stearate, soapstone and potassium perfluorooctanate..

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23. A fire suppressing gas generator composition, comprising:  
between approximately 75.0 and 85.0 wt% of 5-aminotetrazole;  
between approximately 5.0 and 15.0 wt% of an oxidizer salt;  
between approximately 1.0 and 10.0 wt% of an elastomeric polymeric binder; and  
between approximately 2.0 and 10.0 wt % of a flame inhibitor precursor.

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24. The fire suppressing gas generator composition recited in claim 23, further comprising between approximately 0.1 and 1.0 wt% of a powder pressing modifier, wherein said powder pressing modifier is mica.

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25. The fire suppressing gas generator composition recited in claim 23, further comprising between approximately 0.1 and 1.0 wt% of an electrostatic charge suppressor, wherein said electrostatic charge suppressor is graphite.

20 26. The fire suppressing gas generator composition recited in claim 23, wherein said oxidizer salt is in an amount sufficient to cause flameless deflagration of said 5-aminotetrazole and wherein said oxidizer salt is selected from the group consisting of potassium perchlorate and potassium nitrate.

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27. The fire suppressing gas generator composition recited in claim 23, wherein said elastomeric polymeric binder comprises polyacrylate ester.

5 28. The fire suppressing gas generator composition recited in claim 23, wherein said flame inhibitor precursor is selected from the group consisting of decabromodiphenyl ether, decabromodiphenyl sulfide, decabromodiphenyl sulfate, decabromobiphenyl, hexabromobenzene, pentadecabromotriphenyl amine, and potassium perfluorooctanoate.

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